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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/735,260	12/12/2000	Ronald J. Parise	97-1775-A	7673
7590	08/05/2004		EXAMINER	
Robert J. Feltovic 55 Griffin Road South Bloomfield, CT 06002			PARSONS, THOMAS H	
			ART UNIT	PAPER NUMBER
			1745	

DATE MAILED: 08/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	09/735,260	PARISE, RONALD J.
	Examiner Thomas H Parsons	Art Unit 1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 21 July 2003.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) 19-21 is/are allowed.
- 6) Claim(s) 1-18 and 22-27 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____.
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____.

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 21 July 2003 has been entered.

***Response to Amendment***

This is in response to the Amendment filed 21 July 2003.

***Claim Rejections - 35 USC § 103***

12. The rejection of claim 1-7, 9-14, 16, 18, 22, 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (5,405,680), and further in view of Smith et al. (4,751,115) has been **withdrawn** in view of a new rejection set forth below.

13. Claims 15 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. in combination with Smith et al as applied to claims 10 and 22 above, and further in view of Stearns (3,053,923) has been **withdrawn** in view of a new rejection set forth below.

14. Claims 8 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. as applied to claims 1, 3, 7 and 10, 11, and 16 above, and further in view of Altman (4,147,040) has been **withdrawn** in view of a new rejection set forth below.

***Response to Arguments***

2. Applicant's arguments with respect to claims 1-27 have been considered but are moot in view of the new rejection set forth below.

**(NEW) DETAILED ACTION**

***Specification***

3. The disclosure is objected to because of the following informalities:

**Page 1:**

line 15, suggest changing “global warming” to --thermal pollution--;

**Page 6:**

Suggest deleting the text

$$\chi = [1 + Z ((T_H + T_L) / 2)]^{1/2}$$

and”

and reinserting the same after line 1;

**Page 6:**

line 5, suggest changing “ $v_{oc}$ ” to -- $V_{oc}$ --;

**Page 7:**

line 18, suggest changing “Global Warming” to --thermal pollution--;

line 20, suggest changing “three” to --two--;

**Page 8:**

line 2, suggest inserting “and” before “a”;

line 6, suggest changing the semicolon after “atmosphere” to a period;

lines 6 and 7, suggest deleting the text “and the possible depletion of the ozone layer due to interactions with chemicals that have been discharged into the atmosphere during this period.”;

**Page 10:**

line 2, suggest inserting “of objects” after the text “actual cooling”;  
lines 2-5, suggest deleting the text beginning “In reality, global warming may not...” and ending “...For Example,”;  
line 5, suggest changing “if” has been changed to --If--;  
line 15, suggest inserting “objects on” after the text “the temperature of”;  
lines 19-20, suggest deleting the text “Therefore, if global warming is a problem, which it may well be, then we can help reduce that problem significantly.” and replacing the same with the text --Therefore, any wayward thermal energy in the atmosphere can be radiated to deep space.--;

line 22, suggest changing “to reduce” to --for cooling--;

line 23, suggest changing “global warming” to --objects on the earth--;

**Page 11:**

line 4, suggest inserting “objects on” after “energy from”;  
line 6, suggest inserting “objects on” after “to cool”;

**Page 12:**

Suggest deleting lines 7-23;

**Page 13:**

Suggest deleting lines 1 through line 8, ending with the word “available” ;

line 9, suggest changing the text “still be utilized if necessary to dump” to --be used to transmit--;  
line 18, suggest changing “anti-global warming” to “thermal energy transmitting”;  
line 21, suggest changing “anti-global warming” to “thermal energy transmitting”;

**Page 14:**

line 6, suggest changing “anti-global warming” to “thermal energy transmitting”;  
line 20, suggest changing “anti-global warming” to “thermal energy transmitting”;

**Page 18:**

Line 6, suggest changing “anti-global warming” to “thermal energy transmitting”;  
line 19, suggest changing “anti-global warming” to “thermal energy transmitting”;  
line 21, suggest changing “global warming” to “thermal pollution”;

**Page 45:**

line 13, suggest changing “anti-global warming” to “thermal energy transmitting”;  
line 15, suggest changing “anti-global warming” to “thermal energy transmitting”;

**Page 46:**

lines 18-20, suggest changing the text “with the commitment of the automobile manufacturers to help alleviate the problem of global warming” to “to transmit thermal pollution from the vehicle engine into deep space”;

**Page 47:**

line 16, suggest changing “anti-global warming” to “thermal energy transmitting”;  
line 19, suggest changing “anti-global warming” to “thermal energy transmitting”;

**Page 48:**

line 1, suggest changing “anti-global warming” to --thermal energy transmitting--;  
line 12, suggest changing “anti-global warming” to “thermal energy transmitting”;  
line 14, suggest changing the text “the art of global warming” to “thermal pollution”;

**Page 55:**

Line 2, suggest changing “global warming” to --thermal pollution--;  
Line 4, suggest changing “said” to --the--;  
Line 5, suggest changing “said” to --the--; and,  
Line 8, suggest changing “said” to --the--.

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
  - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
2. Claims 1-5, 9-13, 18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lemley (4,338,560).

**Claim 1:** Lemley in Figure 2 discloses a method for radiating thermal energy from a terrestrial position into deep space comprising arranging a thermal transmitting material over an

object not in direct sunlight (col. 1: 6-10), the thermal energy transmitting material positioned to remove waste heat proximate and external the object thereby reducing thermal pollution from a terrestrial position into deep space; and, positioning the thermal energy transmitting material so that a transmitting surface thereof (radiators) faces deep space such that fluid communication therebetween consists of deep space and the transmitting surface, the material having spectral surface properties of high emissivity (radiation absorptive and radiation emissive material, such as metal) (abs.; Figure 2 showing collectors 10 and radiators 22, both of a radiation absorptive and radiation emissive material, and coated with a polyester film, and facing earth and deep space, respectively; col. 2: 14-68).

As to the recitations “material configured and removably positioned” and “wherein the object includes objects one the surface of the earth and proximate thereto”, column 2, lines 38 through column 3, line 5 discloses that the size of the array relative to a vehicle depends upon the amount of power required by the vehicle which also appears to be a function of the altitude and the IR flux on the a body at that altitude (see equation 1). This disclosure suggests a “thermal energy transmitting material configured and removably positioned” on an object proximate the earth depending upon desired size and power requirements.

Although Lemley does not specifically recite “...in a spectral band substantially transparent to the atmosphere of the earth.”, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have expected the material of Lemley to provide the claimed properties as both metals are similar, if not the same, in structure and function.

**Claim 2:** Although Lemley does not specifically recite that the terrestrial object is covered with the transmitting material only at intervals during which the object is not in direct

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sunlight; it would have been obvious to one of ordinary skill in the art at the time the invention was made to have expected the object to be covered with the transmitting material only at intervals during which the object is not in direct sunlight in light of Lemley's teaching on column 1, lines 5-11 that transmission occurs during day and/or night.

**Claims 3 and 11:** Although Lemley is silent with respect to the material having a normal spectral emissivity ranging from 0.8 to about 1.0, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have expected the material of Lemley (aluminum as disclosed on col. 2: 19) to provide the claimed material (aluminum) property as both materials are similar in structure and function.

**Claims 4 and 12:** Although Lemley is silent with regards to the material having a low absorptivity in all spectral bands, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have expected the material of Lemley to provide the claimed material property as both materials are similar in structure and function.

**Claims 5 and 13:** Although Lemley is silent with regards to the material having an absorptivity ranging from about 0.3 to about 0.0, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have expected the material of Lemley to provide the claimed material property as both materials are similar in structure and function.

**Claims 6 and 14:** Lemley discloses that the spectral band is selected from about  $8\mu$  to about  $13\mu$  (col. 2: 44-68).

**Claims 9 and 18:** Although Lemley is silent with regards to material comprising a coating that reflects incoming thermal infrared electromagnetic energy, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have expected

the material of Lemley to provide the material property as both materials are similar in structure and function.

**Claim 10:** Lemley in Figure 2 discloses a device for transmitting thermal energy from an object into deep space comprising a thermal transmitting material designed to cover an object not in direct sunlight (col. 1: 6-10), the thermal energy transmitting material positioned to remove waste heat proximate and external the object thereby reducing thermal pollution from a terrestrial position into deep space; and, positioning the thermal energy transmitting material so that a transmitting surface thereof (radiators) faces deep space such that fluid communication therebetween consists of deep space and the transmitting surface, the material having spectral surface properties of high emissivity (radiation absorptive and radiation emissive material, such as metal) (abs.; Figure 2 showing collectors 10 and radiators 22, both of a radiation absorptive and radiation emissive material, and coated with a polyester film, and facing earth and deep space, respectively; col. 2: 14-68).

As to the recitations “material configured and removably positioned” and “wherein the object includes objects one the surface of the earth and proximate thereto”, column 2, lines 38 through column 3, line 5 discloses that the size of the array relative to a vehicle depends upon the amount of power required by the vehicle which also appears to be a function of the altitude and the IR flux on the a body at that altitude. This disclosure suggests a “thermal energy transmitting material configured and removably positioned” on an object proximate the earth depending upon desired size and power requirements.

Although Lemley does not specifically recite “...in a spectral band substantially transparent to the atmosphere of the earth.”, it would have been obvious to one of ordinary skill

in the art at the time the invention was made to have expected the material of Lemley to provide the claimed properties as both metals are similar, if not the same, in structure and function.

**Claim 22:** Lemley discloses that the thermal transmitting material is positioned in thermal contact with a heat transfer surface (Figure 2 showing thermal transmitting material 10, in thermal contact with thermoelectric elements 14 and 16; col. 2: 6-10; and 25-37).

4. Claims 6, 7, 14, 16, and 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lemley as applied to claims 1, 3, 10 and 11 above, and further in view of Chang et al. (5,405,680).

Lemley is as applied, argued, and disclosed above, and incorporated herein.

Claims 6, 14, 7 and 16: Lemley does not disclose specific spectral bands or a suspension of a spectral substance in a polymer base.

**Claims 6 and 14:** Chang et al. disclose that the spectral band is selected from the group consisting of about 8  $\mu\text{m}$  to about 13  $\mu\text{m}$  (col. 3:41-51; col. 4: 5-9; col. 6: 32-37; and col. 7: 40-41).

**Claims 7 and 16:** Chang et al. disclose that the material comprises a suspension of a spectral substance (semimetal and selective emissive material) in a polymer base (paint).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have substituted the material of Lemley by with the material of Chang et al. because Change et al. teach materials that would have provided a selective emissivity function high in the 8-13 micron wavelength region thereby improving the mechanism for radiative cooling of enclosures.

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**Claims 24-27:** Chang et al. disclose that the object is an automobile, a vehicle (which would encompass an airplane, a house or building structure. These structures would obviously be located between about an altitude of flying aircraft and about the surface of the earth and between an altitude of about 60,000 feet from the surface of the earth and about the surface of the earth, as set forth in claims 26 and 27.

5. Claims 8 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lemley, and further in view of Chang et al. as applied to claim 1, 3, 7, 10 and 11 above, and further in view of Altman.

Lemley and Chang et al. are as applied, argued, and disclosed above, and incorporated herein.

Lemley and Chang et al. do not disclose spectral substance selected from the group consisting of carbon black acetylene soot, camphor soot, zinc sulfide, silver chloride, potassium chloride, and zinc selenide.

Altman disclose a spectral substance (infrared radiation transmitting material) selected from the group consisting zinc sulfide and zinc selenide (col. 4:42-47).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Chang et al. by using the spectral substance of Altman because Altman teaches a spectral substance that would have provide for a continuous, uninterrupted and unobscured flow of heat thereby improving the overall method of localized cooling of relatively small regions.

18. Claims 15 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lemly as applied to claim 10 respectively, above, and further in view of Stearns (3,053,923)

Change et al. are as applied, argued, and disclosed above, and incorporated herein.

Chang et al. do not disclose that the heat transfer surface and the thermal transmitting material are disposed within a pressure cell having a pressure less than ambient.

Stearns in Figure 4 discloses a heat transfer surface and thermal transmitting material disposed within a pressure cell having a pressure less than ambient (gas-tight, transparent envelop 72).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the device of Lemley, by using the pressure cell of Stearns because Stearns discloses a pressure cell that would have prevented hot junctions from being cooled by convection thereby improving the overall performance of the method.

***Allowable Subject Matter***

15. Claims 19-21 are allowable over the prior art of record.

***Reasons for Indicating Allowable Subject Matter***

16. The following is a statement of reasons for the indication of allowable subject matter:

Altman teaches an upper surface (i.e. a first junction surface) composed of a material having a high absorptive power for the solar spectrum and a low thermal emissivity wherein the first junction surface is in thermal contact with one of deep space and solar energy. The claimed invention comprises a first junction surface in thermal contact with one of deep space and solar

energy wherein the first surface has a high thermal emissivity toward the atmosphere of the earth.

Therefore, a search of the prior art of record failed to reveal or explicitly teach, alone or in combination, what is instantly claimed: in particular,

An electricity generating device for use in an environment having an ambient pressure, comprising a first junction surface in thermal contact with one of deep space and solar energy, said first surface having a high thermal emissivity toward the atmosphere of the earth; a second junction surface in thermal contact with an object located at about a surface of the earth or proximate thereto; and an electricity generating cell intermediate the first and second junction surfaces; wherein the first and second junction surfaces are at a temperature different from each other producing a thermoelectric potential between the first and second junction surfaces.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas H Parsons whose telephone number is (571) 272-1290. The examiner can normally be reached on M-F (7:00-4:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thomas H Parsons  
Examiner  
Art Unit 1745

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